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VALIDATION OF THE ACB FOR JOB PERFORMANCE IN FIVE JOB AREAS.(U)
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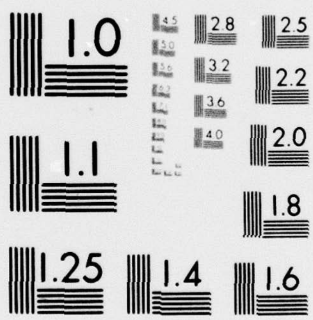

MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

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Performance in Five Job Areas

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9 Research Memorandum 63-1

6 VALIDATION OF THE ACB FOR JOB PERFORMANCE IN FIVE JOB AREAS

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Submitted by

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VALIDATION OF THE ACB FOR JOB PERFORMANCE IN FIVE JOB AREAS

BACKGROUND

The aptitude area system of enlisted classification has been under continuing study since its introduction in 1949. Army Classification Battery (ACB) test scores and aptitude area composite scores have been correlated with measures of training and job performance in a wide range of military occupational specialties (MOS) representative of all occupational areas. In 1955, the first extensive revision of the aptitude area system and of the enlisted MOS classification structure was accomplished, utilizing findings on validation studies for approximately 40 MOS (Zeidner, Cory, and Karcher, 1956). A further review and possible reconstitution of the aptitude area system is planned, based on findings from nearly 100 additional MOS studies.

The present Research Memorandum presents results of ACB test validation for on-job performance in 29 MOS representative of five technical (non-combat) areas for which five different aptitude area composites are the selectors: Electronics (seven MOS--all electrical maintenance jobs); General Maintenance (six MOS); Motor Maintenance (four MOS); Clerical (four MOS); General Technical (eight MOS--all medical service jobs).

Although three replacement tests and two new tests (components of Combat Aptitude areas only) have been introduced into the ACB since data for the predictor measures in the present study were collected prior to January 1958, results are of value for two reasons: (1) a high relationship exists between the tests which were then operational and corresponding measures in the current battery; and (2) the MOS studied represent jobs for which no previous ACB test validation for job performance criteria had been conducted. Moreover, since the validity of the ACB for training success in these 29 MOS was reported, the method of correction for restriction in range to a full mobilization input has been changed. In earlier studies, validity coefficients for each sample were corrected only for univariate restriction of the aptitude area of selection. In studies in which the effects of allocating by priorities to the full range of MOS must be considered, the multivariate method (Gulliksen) using all ACB tests as variables of explicit restriction, is considered more appropriate. In the studies reported, validity coefficients of ACB tests and aptitude area composites were corrected for restriction in range by both univariate and multivariate methods.

OBJECTIVES

Data provided by the present analysis will ultimately be used in reconstituting the aptitude area system. However, no reorganization in terms of specific MOS can be suggested until a substantial number of MOS have been studied. The specific objectives of the analysis were:

1. To obtain unbiased estimates of the validity of each ACB test for each job and each job family studied.

2. To evaluate the aptitude area selector composite for the five job families represented and final course grade in the appropriate training course as predictors of later job performance.

3. To assess the differential validity of current (1962) composites for the five job families.

4. To compare validity estimates obtained with the univariate and multivariate methods of correction for restriction in range.

METHOD

PREDICTOR VARIABLES

1. The ten Army Classification Battery (ACB) tests in use during the period of data collection (prior to January, 1958). Thus Reading and Vocabulary, instead of the current Verbal; Arithmetic Reasoning AR-1 and AR-2 instead of AR-3 and AR-4; and Electrical Information and Radio Information, instead of the current Electronics Information Test used in the analysis.

2. The current aptitude area selector for each MOS sample.

3. Final numerical grade in the prerequisite Army course,

4. Years of civilian education.

CRITERION OF JOB SUCCESS

For each man in a given job, ratings were obtained from his immediate supervisor and from four associates designated by his commanding officer. Ratings were obtained after the man had been on duty in the appropriate MOS for about six months. The ratings were made independently, using the Army Enlisted On-the-job Data Sheet (Forms 114 and 115) which provides three 10-point graphic scales: job knowledge, job performance, and promotability. The criterion score for each man was the sum of the supervisor ratings on the three scales plus the average of the associates' summed ratings on the three scales. The development of the procedure has been described in Fuchs, Uhlaner, Weinert, and Zeidner, 1951.

SAMPLES

Each job sample consisted of all men in the Army school course leading to a given MOS for whom job success ratings were received within 9 months after they had completed the course. Table 1 shows the MOS studied, the number of cases in each sample, aptitude area on which selection is currently based, and dates within which data were collected. Sources of the data have been reported in Helme, Trump, and White, 1957; Helme and White, 1957; Woods, Burke, White, and Karcher, 1957; Helme and Boldt, 1958.

Table 1

SAMPLES USED IN ANALYSIS OF FIVE APTITUDE AREA JOBS

Current Aptitude Area	MOS No.	MOS Title	N	Dates of Data Collection
EL	311.1	Infantry Communications Specialist	161	April 1954-Aug. 1957
EL	311.6	Infantry Communications Specialist (NCO)	87	" " " "
EL	312.1	Armor Communications Specialist	117	" " " "
EL	313.1	Artillery Communications Specialist	116	" " " "
EL	313.6	Artillery Communications Specialist (NCO)	125	" " " "
EL	322.1	Cable Splicer	51	" " " "
EL	327.1	Manual Central Office Repairman	70	" " " "
GM	424.1	Turret Artillery Repairman	160	June 1954-March 1957
GM	441.1	Metal Body Repairman	105	Jan. 1956-Dec. 1957
GM	442.1	Welder-Blacksmith	138	" " " "
GM	452.1	Dental Laboratory Specialist	65	Jan. 1953-March 1955
GM	546.1	Laundry, Bath, and Impregnation Specialist	48	July 1954-Sept. 1955
GM	550.0	Supply Handler	156	July 1954-March 1955
MM	621.1	Engineer Equipment Mechanic	71	Aug. 1964-March 1956
MM	671.2	Airplane Mechanic	59	July 1954-Dec. 1955
MM	675.1	Single-Rotor Helicopter Mechanic	155	July 1954-Aug. 1956
MM	676.1	Tandem Rotor Helicopter Mechanic	81	July 1954-Dec. 1955

Table 1 (Continued)

Current Aptitude Area	MOS No.	MOS Title	N	Dates of Data Collection
CL	719.1	Movements Specialist	128	July 1954-Feb. 1956
CL	730.0	Finance Clerk	307	July 1954-April 1955
CL	760.0	Supply Clerk	219	July 1954-April 1955
CL	768.1	General Supply Specialist	86	July 1954-Feb. 1956
GT	911.1	Medical Specialist	125	Jan. 1953-March 1955
GT	911.2	Medical Specialist	82	" " " "
GT	914.1	Neuropsychiatric Specialist	55	" " " "
GT	917.1	Dental Specialist	144	" " " "
GT	931.1	Medical Laboratory Specialist	86	" " " "
GT	933.1	Preventive Medicine Specialist	65	" " " "
GT	934.1	Food Inspection Specialist	144	Jan. 1956-Dec. 1957
GT	935.1	X-Ray Specialist	53	Jan. 1953-March 1955

STATISTICAL ANALYSIS

Pearson product-moment correlation coefficients between the job performance criterion and each ACB test, final course grade, and years of civilian education were computed in each sample. The coefficients were then corrected for restriction in range by two methods: (1) Using the univariate method, the correlation coefficients were corrected for restriction in range resulting from selection on the aptitude area in effect at the time the men were initially classified. (2) Using the univariate-multivariate method, coefficients were first corrected back to course input sample values for restriction in range caused by the requirement for successful completion of the course. Then, using the standard matrix of ACB intercorrelations, with all ACB tests as variables of explicit restriction, the multivariate method of correction was applied. By these corrections, it was possible to generalize results of the study to a population consisting of total Army enlisted input during full-scale mobilization.

Since the objective was to evaluate both individual ACB tests and aptitude area composites, the individual MOS were grouped into job clusters determined by the aptitude area composite serving as selector. Average validity coefficients were obtained for each job cluster, and the predictor variables were compared both in terms of the absolute value of the validity coefficients obtained and in terms of the differential prediction among job clusters.

RESULTS

UNIVARIATE CORRECTION

Table 2 shows the average validity coefficients of the aptitude area composites for job performance in each of five job-group samples. Validity coefficients of the ACB tests and aptitude areas in the individual MOS samples are presented in the Appendix (Table A-1). In terms of absolute validity, all coefficients tended to be low. The current operational selector for each job group (the value underlined in Table 2) was in each case among the most valid predictors. Only in the medical job group, however, did the operational selector (GT) exceed all other composites in validity.

In general, several aptitude area composites were of essentially equal validity for a given job group. Some gross differential prediction was noted when jobs selected on the more technological aptitude areas (Electronic, General Maintenance, and Motor Maintenance) and the more cognitive areas (Clerical, General Technical, and Radio Code) were grouped together. Two job groups, Electrical Maintenance and Motor Maintenance, tended to cluster around the more technological dimension. Clerical and Medical jobs tended to cluster on the general cognitive ability dimension.

Similarly, when the averaged validity coefficients of the ACB tests were considered (Table 3), the Mechanical Aptitude, Shop Mechanics, and Automotive Information tests--and Electrical Information and Radio Information to a lesser extent--were most valid for jobs in the Electrical Maintenance and Motor Maintenance areas, whereas the Reading and Vocabulary, Arithmetic Reasoning, and Pattern Analysis tests tended to be more valid for Clerical and Medical MOS. Tests in both dimensions were valid for jobs in the General Maintenance area.

Table 2

AVERAGE VALIDITY COEFFICIENTS FOR APTITUDE AREA COMPOSITES IN FIVE JOB GROUPS CORRECTED BY UNIVARIATE METHOD

Job Group	No of MOS	Validity Coefficients EL	GM	MM	CL	GT	RC
Electrical Maintenance	7	19	19	22[a]	12	10	09
General Maintenance	6	19	18	18	20[a]	19	15
Motor Maintenance	4	18[a]	15	15	09	09	05
Clerical	4	17	17	08	19	24[a]	20
Medical	8	23	23	16	26	28	24

[a]Validity coefficient exceeds both aptitude area of selection and all other composites for particular job group.

Underlined validity coefficients are in aptitude area of selection.

Table 3

AVERAGE VALIDITY COEFFICIENTS FOR ACB TESTS, YEARS OF CIVILIAN EDUCATION, AND FINAL COURSE GRADE IN FIVE JOB GROUPS (CORRECTED BY UNIVARIATE METHOD)

Job Group	No. of MOS	Validity Coefficients										Yrs Ed	Final Course Grade
		RV	AR	PA	ACS	ARC	MA	SM	AI	EI	RI		
Electrical Maintenance	7	06	12	09	15	10	18	19	20	14	12	17	17
General Maintenance	6	15	19	13	18	08	17	21	16	21	06	17	29
Motor Maintenance	4	04	10	09	11	06	12	16	15	15	16	10	26
Clerical	4	18	26	18	14	16	14	14	04	16	11	27	23
Medical	8	24	27	23	21	16	20	19	13	22	09	19	26

Final course grade was the single most valid predictor for most job groups, although coefficients were rather low. This finding, while anticipated, points again to the marked divergence between prediction of school performance and prediction of job performance. Not only were the aptitude area composites in use developed mainly on validation for school training, but that training itself would also be expected to reduce the relative importance of initial aptitude while enhancing the importance of specific skill and knowledge gained.

MULTIVARIATE CORRECTION

The multivariate model appeared to reflect the operational situation better than the assumption of restriction of the aptitude area of selection alone. The pool from which enlisted men are selected for a given MOS has, in many cases, been affected by prior selection for training in other occupational areas, usually on one of their higher aptitude area scores. Only in those few cases where an enlisted man is assigned on the basis of his best aptitude area score on first screening does the multivariate regression equation reduce to the univariate.

Table 4 shows the average validity coefficients of the aptitude area composites in each of the five job groups. The validity coefficients of each aptitude area and each ACB test for each of the 29 MOS are shown in Appendix B.

Coefficients are generally somewhat higher than those obtained with the univariate model. Again, several aptitude area composites had essentially equal validity within each job group. The current selector for each job group (underlined value in Table 4) was among the most valid for the job group in question. In general, the differential validity pattern observed with univariate correction was less apparent with the multivariate model.

Table 4

AVERAGE VALIDITY COEFFICIENTS FOR APTITUDE AREA COMPOSITES IN FIVE JOB GROUPS (CORRECTED BY MULTIVARIATE METHOD)

Job Group	No. of MOS	Validity Coefficients EL	GM	MM	CL	GT	RC
Electrical Maintenance	7	<u>22</u>	23	26[a]	20	17	17
General Maintenance	6	32	<u>32</u>	31	30	30	26
Motor Maintenance	4	27[a]	22	<u>23</u>	15	12	12
Clerical	4	22	22	16	<u>19</u>	24[a]	22
Medical	8	27	30	23	30	<u>30</u>	27

[a]Validity coefficient exceeds both aptitude area of selection and all other composites for particular job group.

Underlined validity coefficients are in aptitude area of selection.

When the technological aptitude areas (Electronic, General Maintenance, and Motor Maintenance) were considered separately, the validity pattern held up for the Motor Maintenance and Electrical Maintenance job groups. The clerical and medical job groups, however, tended to overlap the technological cluster to such an extent that no clear-cut general cognitive clustering emerged.

Table 5 shows the average validity coefficients of the ACB tests across job groups. Again, coefficients were somewhat higher than those obtained in the multivariate analysis, and the validity pattern was less differential. The Mechanical Aptitude, Shop Mechanics, and Automotive Information tests tended to be more valid for the technological areas than for the cognitive areas. The separate patterning for the Reading and Vocabulary, Arithmetic Reasoning, and Pattern Analysis tests was again found, although less clear-cut than in the univariate analysis. All tests showed essentially equal validity for the General Maintenance jobs.

Table 5

AVERAGE VALIDITY COEFFICIENTS FOR ACB TESTS, YEARS OF CIVILIAN EDUCATION, AND FINAL COURSE GRADE IN FIVE JOB GROUPS (CORRECTED BY MULTIVARIATE METHOD)

Job Group	No. of MOS	RV	AR	PA	ACS	ARC	MA	SM	AI	EI	RI	Yrs Ed	Final Course Grade
		Validity Coefficients											
Electrical Maintenance	7	12	17	13	22	16	25	24	23	17	11	22	31
General Maintenance	6	26	29	25	25	18	29	30	28	29	18	23	32
Motor Maintenance	4	08	15	12	18	12	20	22	21	23	22	16	26
Clerical	4	18	26	21	14	20	18	19	14	20	16	30	26
Medical	8	27	28	28	26	18	22	26	21	26	15	22	34

Coefficients obtained with years of civilian education and final course grade were somewhat larger than those obtained when the univariate model was applied. Both predictors yielded coefficients similar to the more valid individual tests in each job group. Final course grade, as anticipated, was in most cases the most valid predictor for each job group.

SUMMARY AND CONCLUSION

Unbiased estimates of validity for ACB tests and aptitude area composites against on-job performance were obtained in 29 MOS representative of five technical occupational areas. Coefficients were corrected by both univariate and multivariate models to the full mobilization population. Evaluation of the current aptitude area selectors indicated that in each job group several aptitude areas were equally useful in predicting the criterion. Some tendency emerged for technological ability tests and general cognitive ability tests to form two separate clusterings of validity coefficients. Electrical Maintenance and Motor Maintenance jobs tended to cluster on the dimension of electrical-mechanical tests while Medical and Clerical jobs yielded validity coefficients that clustered about the general cognitive ability dimension. Using the multivariate model for correction increased slightly the absolute value of validity coefficients; however, differential predictive validity was decreased for tests other than those included in the current aptitude area composites.

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APPENDIX A

Table A-1

VALIDITY COEFFICIENTS FOR ACB TESTS, YEARS OF CIVILIAN EDUCATION AND FINAL COURSE GRADE FOR 29 MOS (CORRECTED BY UNIVARIATE MODEL)

	ACB TESTS											
MOS	RV	AR	PA	MA	ACS	ARC	SM	AI	EI	RI	Years of Education	Final Course Grade
311.1	.07	.04	-.01	.08	.03	.02	.11	.02	.05	.10	.11	.21
311.6	.17	.29	.30	.38	.19	.20	.30	.35	.26	.22	.20	.34
312.1	.03	.05	.13	.30	-.02	.07	.25	.32	.22	.21	.20	.39
313.1	.04	.21	.07	.28	.09	-.08	.27	.34	.41	.34	.18	.40
313.6	-.10	-.05	.02	.08	.15	-.05	.17	.04	-.06	-.10	.11	.12
322.1	.01	.01	.07	-.01	.29	.44	.01	.03	-.06	.02	.26	.04
327.1	.22	.31	.04	.15	.32	.10	.24	.33	.17	.04	.16	.41
424.1	.17	.01	.10	.11	-.02	-.07	.14	.17	.16	-.01	.18	.21
441.1	.13	.13	.06	.15	.19	.10	.14	.21	.19	.13	-.03	.16
442.1	.20	.25	.32	.28	.20	.08	.28	.30	.22	.03	.06	.42
452.1	.15	.41	.30	.14	.43	.12	.18	-.14	.09	.20	.22	.38
546.1	.04	-.03	-.23	-.07	.05	.16	-.10	.01	.32	-.01	.34	.10
550.0	.23	.37	.25	.43	.24	.06	.41	.39	.29	.00	.25	.46
621.1	.06	.12	.21	.12	.09	-.18	.30	.36	.17	.33	.09	.37
671.2	-.08	-.01	-.02	.15	.11	.12	.03	-.03	.15	.22	.22	.20
675.1	.10	.16	.16	.14	.15	.14	.19	.22	.17	.10	-.01	.23
676.1	.07	.15	-.00	.06	.10	.16	.10	.05	.12	-.02	.08	.23
719	.25	.23	.16	.10	.20	.24	.07	-.18	.21	.09	.31	.33
730	.13	.17	.14	.08	.03	.04	.08	.04	.09	.04	.27	.28
760	.36	.49	.26	.23	.29	.26	.24	.22	.33	.15	.31	.26
768.1	.00	.14	.17	.13	.04	.09	.16	.10	.00	.17	.20	.04
911.1	.05	.20	.02	.14	-.04	-.10	.17	.27	.20	.09	-.03	.33
911.2	.46	.50	.54	.37	.43	.30	.32	.17	.34	.31	.35	.39
914.1	.27	.39	.39	.31	.26	.37	.22	-.04	.29	.14	.14	.18
917.1	.18	.16	.07	-.04	.15	.16	.13	-.00	.19	.16	.25	.26
931.1	.30	.28	.21	.05	.17	.11	.22	.16	.17	.16	.12	.30
933.1	.10	.12	.14	.17	.37	.15	-.07	.14	.09	.02	.25	.27
934.1	.21	.28	.10	.23	.29	.15	.26	.15	.12	.12	.40	.33
935.1	.32	.21	.40	.28	.07	.13	.27	.16	.32	.12	.03	.29

APPENDIX A

Table A-2

VALIDITY COEFFICIENTS FOR APTITUDE AREA COMPOSITES FOR 29 MOS
(CORRECTED BY UNIVARIATE MODEL)

	Aptitude Area					
MOS	EL	GM	MM	CL	GT	RC
311.1	.10	.08	.04	.06	.06	.05
311.6	.36	.34	.40[a]	.21	.25	.22
312.1	.31	.24	.35[a]	.01	.04	.06
313.1	.43	.23	.35	.08	.14	-.02
313.6	-.03	.14[a]	.06	.03	-.08	-.09
322.1	-.02	.03	.02	.17	.01	.27[a]
327.1	.15	.20	.30	.31[a]	.29	.19
424.1	.11	.14	.17[a]	.09	.10	.06
441.1	.20	.13	.21[a]	.18	.14	.14
442.1	.22	.33	.32	.23	.25	.17
452.1	.18	.25	-.05	.33[a]	.31	.16
546.1	.10	-.16	-.02	.05	.01	.12[a]
550.1	.31	.42	.44[a]	.27	.33	.17
621.1	.26	.31	.31	.09	.10	-.07
671.2	.22[a]	.02	.03	.02	-.05	.02
675.1	.17	.20	.21	.14	.14	.14
676.1	.07	.08	.06	.10	.12	.14[a]
719	.17	.11	-.10	.26	.26	.29[a]
730	.09	.11	.06	.09	.16[a]	.10
760	.30	.28	.25	.38	.46[a]	.37
768.1	.13	.18[a]	.12	.02	.08	.05
911.1	.18	.14	.25[a]	.01	.14	-.03
911.2	.43	.45	.26	.51	.53	.45
914.1	.31	.31	.08	.31	.36	.38[a]
917.1	.16	.12	.01	.19	.19	.20[a]
931.1	.16	.25	.14	.27	.32	.24
933.1	.10	.00	.17	.27[a]	.12	.15
934.1	.20	.23	.19	.29[a]	.27	.22
935.1	.31	.35[a]	.22	.22	.29	.27

[a]Validity coefficient exceeds both aptitude area of selection and all other composites for particular job group.

Underlined validity coefficients are in aptitude area of selection.

APPENDIX B

Table B-1

VALIDITY COEFFICIENTS FOR ACB TESTS, YEARS OF CIVILIAN EDUCATION AND FINAL COURSE GRADE FOR 29 MOS (CORRECTED BY MULTIVARIATE MODEL)

	ACB TESTS											
MOS	RV	AR	PA	MA	ACS	ARC	SM	AI	EI	RI	Years of Education	Final Course Grade
311.1	.11	.09	.01	.13	.08	.05	.17	.06	.07	.15	.15	.25
311.6	.22	.34	.33	.40	.30	.27	.30	.36	.23	.15	.26	.38
312.1	-.02	-.00	.04	.25	.01	.03	.17	.25	.13	.11	.17	.35
313.1	.10	.26	.09	.33	.14	.05	.31	.35	.45	.31	.25	.45
313.6	-.02	-.02	.05	.22	.28	-.01	.25	.08	-.01	-.15	.16	.16
322.1	.10	.06	.17	.07	.31	.45	.01	.03	-.03	.10	.26	.08
327.1	.38	.49	.21	.35	.44	.25	.45	.47	.33	.09	.29	.55
424.1	.16	.02	.10	.08	.01	-.07	.14	.16	.12	-.01	.17	.19
441.1	.13	.15	.07	.20	.21	.16	.20	.24	.22	.19	.00	.18
442.1	.39	.41	.42	.45	.33	.27	.44	.44	.30	.16	.23	.58
452.1	.32	.50	.43	.22	.51	.24	.22	.01	.17	.20	.30	.45
546.1	.20	.19	.08	.22	.17	.32	.21	.32	.43	.28	.38	.24
550.0	.35	.46	.40	.56	.29	.13	.58	.49	.49	.28	.32	.29
621.1	.01	.05	.15	.13	.07	-.15	.30	.35	.27	.43	.13	.36
671.2	-.11	-.04	-.06	.19	.16	.11	.04	-.03	.14	.23	.22	.18
675.1	.28	.34	.34	.29	.32	.28	.36	.37	.31	.19	.12	.38
676.1	.15	.24	.06	.17	.17	.22	.20	.15	.19	.01	.16	.13
719	.20	.18	.15	.14	.16	.29	.12	-.03	.19	.08	.30	.32
730	.29	.33	.27	.16	.13	.16	.20	.15	.20	.12	.39	.41
760	.24	.36	.28	.26	.25	.26	.28	.30	.35	.22	.31	.27
768.1	.00	.17	.14	.14	.03	.07	.14	.12	.06	.20	.21	.06
911.1	.19	.33	.12	.17	.00	-.04	.24	.32	.27	.14	.06	.46
911.2	.36	.41	.51	.23	.30	.26	.23	.23	.34	.26	.29	.33
914.1	.27	.40	.37	.33	.34	.35	.32	.15	.31	.19	.21	.23
917.1	.15	.13	.07	.06	.12	.13	.14	.03	.16	.13	.22	.24
931.1	.39	.31	.33	.07	.27	.16	.34	.24	.31	.18	.20	.35
933.1	-.03	-.03	.14	.21	.42	.17	-.07	.17	.06	.01	.22	.22
934.1	.30	.44	.17	.34	.37	.22	.39	.25	.20	.17	.48	.48
935.1	.52	.28	.51	.35	.24	.19	.46	.27	.46	.09	.12	.37

APPENDIX B

Table B-2

VALIDITY COEFFICIENTS FOR APTITUDE AREA COMPOSITES FOR 29 MOS
(CORRECTED BY MULTIVARIATE MODEL)

MOS	EL	GM	MM	CL	GT	RC
311.1	$\underline{.15}$	.13	.09	.11	.11	.09
311.6	$\underline{.33}$	.35	.41[a]	.30	.31	.29
312.1	$\underline{.20}$	.14	.28[a]	-.01	-.01	.01
313.1	$\underline{.46}$	.27	.38	.14	.20	.09
313.6	$\underline{.03}$	.21[a]	.14	.15	-.02	-.02
322.1	$\underline{.06}$	.07	.05	.24	.09	.33[a]
327.1	$\underline{.33}$	.42	.47	.47	.48[a]	.38
424.1	.08	$\underline{.14}$	.15[a]	.10	.10	.05
441.1	.26[a]	$\underline{.18}$	.25	.20	.15	.17
442.1	.38	$\underline{.48}$	.48	.42	.44	.39
452.1	.25	$\underline{.33}$	.09	.48[a]	.45	.33
546.1	.39[a]	$\underline{.19}$	.32	.21	.21	.31
550.0	.56	$\underline{.59}$	.57	.37	.44	.29
621.1	.35[a]	.28	$\underline{.31}$	.05	.03	-.08
671.2	.24[a]	.01	$\underline{.04}$	.03	-.09	.00
675.1	.33	.40[a]	$\underline{.38}$	.35	.34	.33
676.1	.16	.17	$\underline{.18}$	.18	.21	.22[a]
719	.17	.15	.03	$\underline{.21}$	.21	.29[a]
730	.20	.25	.17	$\underline{.24}$	.34[a]	.27
760	.35[a]	.32	.32	$\underline{.28}$	.33	.30
768.1	.17[a]	.16	.14	$\underline{.02}$	.09	.04
911.1	.24	.23	.30[a]	.11	$\underline{.28}$	.09
911.2	.35	.37	.25	.38	$\underline{.42}$	.37
914.1	.35	.38[a]	.23	.35	$\underline{.37}$	.37
917.1	.15	.13	.04	.16	$\underline{.15}$	.17[a]
931.1	.24	.38	.20	.38	$\underline{.38}$	.33
933.1	.12	.00	.20	.22[a]	$\underline{-.03}$	.08
934.1	.30	.36	.31	.39	$\underline{.40}$	.31
935.1	.38	.54[a]	.33	.44	$\underline{.44}$	.42

[a]Validity coefficient exceeds both aptitude area of selection and all other composites for particular job group.

Underlined validity coefficients are in aptitude area of selection.